

What is claimed is:

1. An air suspension control system for a vehicle comprising:
  - a source of pressurized air;
  - an air spring;
  - a height control valve having an air inlet port connected to said source of pressurized air, an exhaust port connected to atmosphere and an air spring port connected to said air spring, said height control valve operable to selectively couple between: the air inlet port and the air spring port, the exhaust port and the air spring port, or a neutral position where the air inlet port, the air spring port, and the exhaust port are isolated from each other;
  - an air restriction valve fluidly coupled between said height control valve and said air spring, said air restriction valve operable to selectively open and close communication between said height control valve and said air spring;
  - a first control input for controlling said height control valve, said first control input based on a first parameter;
  - a second control input for controlling said air restriction valve, said second control input based on a second parameter, said second parameter being different from said first parameter;
    - wherein said first parameter comprises a measured vehicle height and said second parameter is selected to control said air restriction valve such that air losses in the air suspension control system are minimized.
2. The air suspension control system according to claim 1 wherein the second parameter is selected from the group consisting of: anti-lock braking system, traction control, electronic braking system, motion sensors, an operator input, a time measurement or combinations thereof.
3. The air suspension control system according to claim 1 wherein said second control input is selected from the group consisting of: an electrical signal, a pneumatic signal, a mechanical signal or combinations thereof.

4. The air suspension control system according to claim 1 wherein said second control input automatically actuates said air shut-off valve based upon selected control logic.
5. The air suspension control system according to claim 1 wherein said air shut-off valve is separate from said height control valve.
6. The air suspension control system according to claim 1 wherein said air shut-off valve is integrally formed with said height control valve.
7. The air suspension control system according to claim 1 wherein said air shut-off valve is integrally formed with said air spring.
8. A method for increasing the ride stability of a vehicle comprising the steps of:
  - selecting a vehicle height value;
  - measuring an actual vehicle height value;
  - comparing the selected vehicle height value to the measured vehicle height value to generate a correction signal;
  - operating a height control valve according to the correction signal to maintain the selected vehicle height value;
  - generating a control signal corresponding to activation of an onboard vehicle system, the control signal being different than the correction signal;
  - selectively actuating a restriction valve with the control signal to selectively interrupt operation of the height control to increase ride stability of the vehicle.
9. The method according to claim 8 wherein the onboard vehicle system is selected from the group consisting of: anti-lock braking system, traction

control, electronic braking system, motion sensors, an operator input, a time measurement or combinations thereof.

10. The method according to claim 8 wherein the control signal is selected from the group consisting of: an electrical signal, a pneumatic signal, a mechanical signal or combinations thereof.

11. A method for minimizing air loss in an air suspension control system for a vehicle comprising the steps of:

coupling an air inlet port of a height control valve to a source of pressurized air;

coupling an exhaust port of a height control valve to the atmosphere;

coupling an air spring port of a height control valve to an air restriction valve;

coupling the air restriction valve to an air spring;

measuring a first parameter;

generating a first control input based on the first parameter for controlling the height control valve;

generating a second control input based on a second parameter for controlling the air restriction valve, said second parameter being different from said first parameter;

applying the second control input to the air restriction valve; and

selectively actuating the air restriction valve according to the second control input in order to prevent loss of pressurized air in the air suspension control system during operation of the vehicle.

12. The method according to claim 11 wherein the second parameter is selected from the group consisting of: anti-lock braking system, traction control, electronic braking system, motion sensors, an operator input, a time measurement or combinations thereof.

13. The method according to claim 1 wherein the second control input is selected from the group consisting of: an electrical signal, a pneumatic signal, a mechanical signal or combinations thereof.

14. An air suspension control system for a vehicle comprising:

    a height control valve having an air inlet port connected to a source of pressurized air, an exhaust port connected to atmosphere and an air spring port connected to an air spring, said height control valve operable to selectively couple between the air inlet port and the air spring port, the exhaust port and the air spring port, or a neutral position where the air inlet port, the air spring port, and the exhaust port are isolated from each other, said height control valve being controlled by a correction signal corresponding to a first vehicle system parameter measured vehicle height;

    an air restriction valve coupled between the height control valve and the air spring, said air restriction valve operable to selectively restrict flow of pressurized air between the height control valve and the air spring such that air losses in the air suspension control system are minimized;

    a control signal, for controlling said air restriction valve, said control signal corresponding to a second vehicle system parameter that is different from the first vehicle system parameter;

    wherein the first vehicle system parameter corresponds to a measured vehicle height.

15. The air suspension control system according to claim 14 wherein the second vehicle system parameter is selected from the group consisting of: anti-lock braking system, traction control, electronic braking system, motion sensors, an operator input, a time measurement or combinations thereof.

16. The air suspension control system according to claim 14 wherein the control signal is selected from the group consisting of: an electrical signal, a pneumatic signal, a mechanical signal or combinations thereof.

17. The air suspension control system according to claim 14 wherein said control signal automatically actuates said air restriction valve based upon selected control logic.